

WHAT IS CLAIMED IS:

1. A method of upscaling single-pixel wide text comprising the steps of:
  - selecting at least one group of four input pixels such that each input pixel in the at least one group is adjacent to each other input pixel in the at least one group;
  - dividing the at least one group of four input pixels into four quadrants such that the four input pixels define an outer boundary of the four quadrants and further such that the four input pixels define a rectangular input mask having a pair of diagonal lines;
  - selecting an output pixel within any one of the four quadrants;
  - determining a position of the output pixel with respect to each of the four input pixels to locate the input pixel closest to the output pixel;
  - determining if the output pixel is further from the closest input pixel in the x-direction or in the y-direction to ascertain a first further direction;
  - determining a color associated with the adjacent pixel in the first further direction;
  - determining a color associated with the closest input pixel;
  - assigning a foreground color to the output pixel solely when the color associated with the adjacent input pixel in the first further direction and the color associated with the closest input pixel are both of the foreground color;
  - assigning a background color to the output pixel when the color associated with the adjacent pixel in the first further direction and the color associated with the closest input pixel are not both of foreground color;
  - determining if the output pixel is positioned on one of the diagonal lines and is closer to the center of the input mask than to the closest input pixel to ascertain a second further direction;
  - determining a color associated with the adjacent pixel in the second further direction;
  - assigning a foreground color to the output pixel solely when the color associated with the adjacent input pixel in the second further direction and the color associated with the closest input pixel are both of the foreground color;

assigning a background color to the output pixel when the color associated with the adjacent pixel in the second further direction and the color associated with the closest input pixel are not both of foreground color; and

assigning to the output pixel, the color associated with the closest input pixel, in the absence of the first and second further directions.

2. The method according to claim 1 wherein the step of determining a position of the output pixel with respect to each of the four input pixels to locate the input pixel closest to the output pixel comprises comparing the position of the output pixel with respect to a neighboring output pixel.

3. The method according to claim 1 wherein the step of determining a position of the output pixel with respect to each of the four input pixels to locate the input pixel closest to the output pixel comprises the steps of:

determining a fractional amount by which the output pixel is further away from the closest input pixel in both x and y directions;

determining whether the fractional amount is larger than one-half of the reciprocal of a scale factor associated with each of the x and y directions; and

associating the output pixel with the closest input pixel defined when the fractional amount is less than one-half of the reciprocal of a scale factor associated with each of the x and y directions.

4. A method of upscaling single-pixel wide text comprising the steps of:

selecting at least one group of four input pixels such that each input pixel in the at least one group is adjacent to each other input pixel in the at least one group;

dividing the at least one group of four input pixels into four quadrants such that the four input pixels define a rectangular input mask and further define an outer boundary of the four quadrants;

determining a set of diagonal lines for the rectangular input mask wherein each diagonal line has a width defined by the reciprocal of a respective scale factor;

selecting an output pixel within any one of the four quadrants;

- determining a position of the output pixel with respect to each of the four input pixels to locate the input pixel closest to the output pixel;
- determining if the output pixel is further from the closest input pixel in the x-direction or in the y-direction to ascertain a further direction;
- determining a color associated with the adjacent pixel in the further direction;
- determining a color associated with the closest input pixel;
- assigning a foreground color to the output pixel solely when the color associated with the adjacent input pixel in the further direction and the color associated with the closest input pixel are both of the foreground color;
- assigning a background color to the output pixel when the color associated with the adjacent pixel in the further direction and the color associated with the closest input pixel are not both of foreground color;
- determining if the output pixel is positioned on one of the diagonal lines;
- assigning a foreground color to the output pixel solely when the color associated with the diagonal line containing the output pixel and the color associated with the closest input pixel are both of the foreground color;
- assigning a background color to the output pixel when the color associated with the diagonal line containing the output pixel is not of foreground color; and
- assigning to the output pixel, the color associated with the closest input pixel, in the absence of the further direction and when the output pixel is not positioned on one of the diagonal lines.

5. The method according to claim 4 wherein the step of determining a position of the output pixel with respect to each of the four input pixels to locate the input pixel closest to the output pixel comprises comparing the position of the output pixel with respect to a neighboring output pixel.

6. The method according to claim 4 wherein the step of determining a position of the output pixel with respect to each of the four input pixels to locate the input pixel closest to the output pixel comprises the steps of:

determining a fractional amount by which the output pixel is further away from the closest input pixel in both x and y directions;

determining whether the fractional amount is larger than one-half of the reciprocal of a scale factor associated with each of the x and y directions; and

associating the output pixel with the closest input pixel defined when the fractional amount is less than one-half of the reciprocal of a scale factor associated with each of the x and y directions.

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